

Docket No. 226310US

IN THE UNITED STATES PATENT & TRADEMARK OFFICE

IN RE APPLICATION OF: :
KENICHI NAGAMI ET AL. : GROUP ART UNIT:
PATENT NO: 5,822,319 :
: EXAMINER:
FOR: ROUTER DEVICE AND
DATAGRAM TRANFER METHOD
FOR DATA COMMUNICATION
NETWORK SYSTEM

STATUS OF CLAIMS AND SUPPORT FOR CLAIM CHANGES
UNDER 37 CFR §1.173(c)

ASSISTANT COMMISSIONER FOR PATENTS
WASHINGTON, D.C. 20231

SIR:

In accordance with 37 C.F.R. §1.173(c), the following is a statement of the status of the patent claims and an explanation of the support in the disclosure of the patent for the changes made to the claims.

Claims 5-10, 12, 15-17, 20, 23, 26, 29, 32, 34, 35, and 37-54 are presently active in the reissue patent application. Claims 1-4, 11, 13-14, 18-19, 21-22, 24, 25, 27-28, 30, 31, 33, and 36 have been cancelled, Claims 5, 7-10, 12, 15-17, 20, 29, 32, 34, and 35 have been amended, and Claims 39-54 have been added.

The changes to the issued claim set consist of claim cancellation, formation of independent claims from previous dependent claims, and minor grammatical changes. No substantive limitations have been removed from the claims so the scope of the amended claims is not enlarged.

In the amendments to the original claims, the additional subject matter is from other of the original claims. For example, Claim 5 was amended to include the subject matter of Claim 1.

In the added claims, each claim is similar in content to at least one of the previously issued claims, but recites additional features of the router device and the datagram transfer method supported elsewhere in the issued claim set and/or supported in the specification but heretofore not claimed.

New Claims 39-54 are discussed and reproduced below using underscoring to depict the added features and using annotating to show support for the added words from the original specification and claims. As these claims are similar in content to the previously issued claims but include additional limitations, the scope of the new claims is not broader than the corresponding originally issued claims.

Claims 39-41:

Claim 39 is similar to original patent Claim 1 but includes information about the network layer address being obtained from a memory storing a correspondence. Claims 40-41 depend from Claim 39.

39. A router device for transferring datagrams among networks comprising:

network interfaces connected with networks including at least one virtual connection oriented network and at least one non-virtual connection oriented network (Fig. 4, 43);

a memory configured to store a correspondence between a virtual connection identifier and a transfer target network interface, and also for storing a correspondence between the virtual connection identifier and a network layer address (see e.g., Transfer Table 120 of Fig. 6);

a first connection identifier analysis unit configured to determine a transfer target network interface for a datagram entered from a virtual connection, by referring to the memory according to a virtual connection identifier of the virtual connection;

a second connection identifier analysis unit configured to determine a transfer target network layer address for the datagram entered from the virtual connection, by referring to the memory according to the virtual connection

identifier of the virtual connection (Fig. 4, 22₃ and the description at col. 18, lines 27-32);

a first transfer unit configured to transfer the datagram to the transfer target network interface connected with another virtual connection oriented network, when the transfer target network interface is determined by the first connection identifier analysis unit; and (Transmission Units 13₁ and 13₂ of Fig. 4)

a second transfer unit configured to transfer the datagram to the transfer target network interface connected with the at least one non-virtual connection oriented network toward the transfer target network layer address, when the transfer target network layer address is determined by the second connection identifier analysis unit.(Transmission Unit 13₃ of Fig. 4 and description at col. 18, lines 31-36).

40. (New) A router device according to claim 39, wherein:
the transfer target network interface configured to transmit the datagram towards a datalink address determined using the transfer target network layer address. (see col. 18, lines 31-36)

41. (New) A router device according to claim 39, wherein:
a transfer target of the datagram is determined without referring to the datagram content. (see col. 18, lines 37-39)

Claims 42-44:

Added Claim 42 is patterned after original patent Claim 21 of the original patent, and includes features corresponding to added Claim 39, but are in method format. Claims 43 and 44 depend from Claim 42.

42. A method for transferring datagrams among networks, using a router device having network interfaces connected with networks including at least one virtual connection oriented network and at least one non-virtual connection oriented network (Fig. 4, 43), the method comprising the steps of:

storing a correspondence between a virtual connection identifier and a transfer target network interface in a memory provided at the router device, and also storing a correspondence between the virtual connection identifier and a network layer address; (see e.g., Transfer Table 120 of Fig. 6)

first determining a transfer target network interface for a datagram entered from a virtual connection at the router device, by referring to the memory according to a virtual connection identifier of the virtual connection;

second determining a transfer target network layer address for the datagram entered from the virtual connection, by referring to the memory according to the virtual connection identifier of the virtual connection; (Fig. 4, 22₃ and the description at col. 18, lines 27-32) [and]

first transferring the datagram to the transfer target network interface connected with another virtual connection oriented network, when the transfer target network interface is determined by the first determining step; and
(Transmission Units 13₁ and 13₂ of Fig. 4)

second transferring the datagram from the transfer target network interface connected with the at least one non-virtual connection oriented network toward the transfer target network layer address, when the transfer target network layer address is determined by the second determining step.
(Transmission Unit 13₃ of Fig. 4 and description at col. 18, lines 31-36).

43. (New) A method according to claim 42, wherein:
the step of second transmitting the datagram from the transfer target network interface transmits the datagram to a datalink address determined using the transfer target network layer address. (see col. 18, lines 31-36)

44. (New) A method according to claim 42, wherein:
the step of second determining the transfer target network layer address is performed without referring to the datagram content. (see col. 18, lines 37-39)

Claims 45-49:

Added Claim 45 is based on original patent Claim 21. Claims 46-49 depend from Claim 45.

45. A method for transferring datagrams among networks, using [a] at least two router devices having network interfaces connected with networks including at least one virtual connection oriented network, the method comprising the steps of:

storing a correspondence between a virtual connection identifier and a transfer target network interface in a memory provided at [the] a router device;

determining a transfer target network interface for a datagram entered from a virtual connection at the router device, by referring to the memory according to a virtual connection identifier of the virtual connection on which the datagram is received; [and]

transferring the datagram to the transfer target network interface determined by the determining step;

first transmitting the datagram along with another virtual connection identifier from the transfer target network interface over a second virtual connection to another router device; (see col. 16, lines 60-65)

receiving the datagram, at said another router device, from the transfer target network interface at the router device over the second virtual connection; (see col. 16, lines 60-65)

removing said another virtual connection identifier from the datagram at said transfer target network interface; and (see col. 17, lines 50-64, which

shows the reception of a datagram with a virtual connection identifier of 1 being routed to a virtual connection 3.)

second transmitting said datagram at said another router device, away from said another router device without said another virtual connection identifier, and without adding another virtual connection identifier. (see col. 27, lines 45-55 which show that a datagram transferred to an Ethernet interface has the Ethernet address attached and thus no output virtual connection identifier, as such information is useless on the Ethernet network, or col. 18, lines 16-34 which shows the transmission of a datagram to a non-virtual connection oriented LAN which like the Ethernet does not require a virtual connection identifier.)

46. A method according to claim 45, wherein said step of second transmitting said datagram away from said another router device comprises transmitting said datagram over a non-virtual connection oriented network. **(col. 18, lines 31-36)**

47. A method according to claim 46, wherein said step of second transmitting said datagram way from said another router device comprises transmitting said datagram to a location using a network layer address associated with the datagram. **(col. 18, lines 40-44)**

48. A method according to claim 45, wherein said step of second transmitting said datagram way from said another router device comprises transmitting said datagram to a location using a network layer address associated with the datagram. **(col. 18, lines 40-44)**

49. A method according to claim 48, wherein said step of second transmitting said datagram way from said another router device comprises transmitting said datagram without referring to the datagram content to a location using a network layer address associated with the datagram. **(col. col. 18, lines 37-39)**

Claim 50:

Added Claim 50 is based on original patent claim 21.

50. A method for transferring datagrams among networks, using a router device having network interfaces connected with networks including at least one virtual connection oriented network, the method comprising the steps of:

storing a correspondence between a virtual connection identifier and a transfer target network interface in a memory provided at the router device;
determining a transfer target network interface for a datagram entered from a virtual connection at the router device, by referring to the memory

according to a virtual connection identifier of the virtual connection on which the datagram is received; [and]

transferring the datagram to the transfer target network interface determined by the determining step; and

transmitting said datagram from the router device without said virtual connection identifier and without adding another virtual connection identifier. (see col. 27, lines 45-55 which show that a datagram transferred to an Ethernet interface has the Ethernet address attached and thus no output virtual connection identifier, as such information is useless on the Ethernet network, or col. 18, lines 16-34 which shows the transmission of a datagram to a non-virtual connection oriented LAN which like the Ethernet does not require a virtual connection identifier.)

Claim 51:

Added Claim 51 describes two router devices, a first router device similar to the router device of Claim 1 and a second router device similar to the router device of Claim 5.

51. (New) A plurality of router devices for transferring datagrams among networks, comprising:

- a first router device including,
 - a first set of network interfaces connected to at least a first virtual connection oriented network,
 - a first memory configured to store a first correspondence between a first input virtual connection identifier and a first transfer target network interface,
 - a first connection identifier analysis unit configured to determine the first transfer target network interface for a first datagram entered from a first input virtual connection, by referring to the first memory according to the first input virtual connection identifier of the first virtual connection, and
 - a first transfer unit configured to transfer the first datagram to the first transfer target network interface determined by the first connection identifier analysis unit; and **(Claim 1)**

- a second router device including,
 - a second set of network interfaces connected to at least a second virtual connection oriented network,
 - a second memory configured to store a second correspondence between a second input virtual connection identifier and a next hop layer address to be used in a case where the second set of network interfaces is connected to at least a non-virtual connection oriented network,
 - a second connection identifier analysis unit configured to determine a second transfer target network interface for a second datagram entered from a second input virtual connection, by referring to the second memory according to the second input virtual connection identifier of the second virtual connection, and

a second transfer unit configured to transfer the second datagram to the second transfer target network interface determined by the second connection identifier analysis unit. **(Claim 5)**

Claim 52:

Added Claim 52 describes a method similar to Claim 21 for transferring datagrams among networks connected by router devices, but with the inclusion of additional features from the specification and claims.

52. (New) A method for transferring datagrams among networks, using a first router device (i.e. the router device at col. 2, lines 48-60 and Claim 1) and a second router device (i.e. the router device at Claim 5) having network interfaces connected with networks including at least one virtual connection oriented network, the method comprising the steps of:

storing a correspondence between a first virtual connection identifier and a first transfer target network interface in a memory provided at the first router device;

determining a first transfer target network interface for a datagram entered from a first virtual connection at the first router, by referring to the memory provided at the first router device according to a virtual connection identifier of the first virtual connection;

transferring the datagram entered from the first virtual connection to the first transfer target network interface determined by the determining step; **(similar to method Claim 21)**

storing a correspondence between a second virtual connection identifier and a second transfer target network interface in a memory provided at the second router device, said second transfer target network interface being connected to a next hop network layer address to be used in a case where the network interfaces of the second router is connected to at least a non-virtual connection oriented network; **(see next hop network layer address of Claim 5)**

determining a second transfer target network interface for a datagram entered from a second virtual connection at the second router, by referring to the memory provided at the second router device according to a virtual connection identifier of the second virtual connection; and

transferring the datagram entered at the second virtual connection to the second transfer target network interface determined by the determining step. **(similar to method Claim 21)**

Claim 53:

Added Claim 53 describes two router devices, a first router similar to the router of Claim 1 and a second router similar to the router of Claim 5 but with the added limitation that the second router transfers the datagram without attaching an output virtual connection identifier to the datagram.

53. (New) A plurality of router devices for transferring datagrams among networks, comprising:

- a first router device including,
 - a first set of network interfaces connected to at least a first virtual connection oriented network,
 - a first memory configured to store a first correspondence between a first input virtual connection identifier and a first output virtual connection identifier,
 - a first connection identifier analysis unit configured to determine the first transfer target network interface for a first datagram entered from a first input virtual connection, by referring to the first memory according to the first input virtual connection identifier of the first virtual connection, and
 - a first transfer unit configured to transfer the first datagram to the first transfer target network interface determined by the first connection identifier analysis unit; and **(Claim 1)**
- a second router device including,
 - a second set of network interfaces connected to at least a second virtual connection oriented network,
 - a second memory configured to store a second correspondence between a second input virtual connection identifier, a second transfer target network interface, and a second output virtual connection identifier,
 - a second connection identifier analysis unit configured to determine the second transfer target network interface for a second datagram entered from a second input virtual connection, by referring to the second memory according to the second input virtual connection identifier of the second virtual connection, and
 - a second transfer unit configured to transfer the second datagram to the second transfer target network interface determined by the second connection identifier analysis means **(Claim 5) without attaching said second output virtual connection identifier to said datagram. (see col. 27, lines 45-55 which show that a datagram transferred to an Ethernet interface has the Ethernet address attached and thus no output virtual connection identifier, as such information is useless on the Ethernet network, or col. 18, lines 16-34 which shows the transmission of a datagram to a non-virtual connection oriented LAN which like the Ethernet does not require a virtual connection identifier.)**

Claim 54:

Added Claim 54 describes a method similar to Claim 21 for transferring datagrams among networks connected by router devices, but with the inclusion of additional features from the specification and claims previously not claimed in method format.

54. (New) A method for transferring datagrams among networks, using a first router device (i.e. the router device at col. 2, lines 48-60 and Claim 1) and a second router device (i.e. the router device described at col. 27, lines 45-55) having network interfaces connected with networks including at least one virtual connection oriented network, the method comprising the steps of:

storing a correspondence between a first virtual connection identifier and a first transfer target network interface in a memory provided at the first router device;

determining a first transfer target network interface for a datagram entered from a first virtual connection at the first router, by referring to the memory provided at the first router device according to a virtual connection identifier of the first virtual connection;

transferring the datagram entered from the first virtual connection to the first transfer target network interface determined by the determining step; **(similar to method Claim 21)**

storing a correspondence between a second virtual connection identifier and a second transfer target network interface in a memory provided at the second router device;

determining a second transfer target network interface for a datagram entered from a second virtual connection at the second router, by referring to the memory provided at the second router device according to a virtual connection identifier of the second virtual connection; and

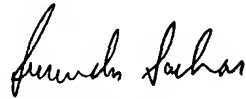
transferring the datagram entered at the second virtual connection to the second transfer target network interface determined by the determining step **(similar to method Claim 21)** without attaching an output virtual connection identifier to said datagram.

(see col. 27, lines 45-55 which show that a datagram transferred to an Ethernet interface has the Ethernet address attached and thus no output virtual connection identifier, as such information is useless on the Ethernet network or col. 18, lines 16-34 which shows the transmission of a datagram to a non-virtual connection oriented LAN which like the Ethernet does not require a virtual connection identifier.)

It is thus respectfully submitted that the reissue claim set is supported by the originally issued claim set and the specification, and that the reissue claim set does not have a scope enlarged with respect to the claim set of the original patent and is in accordance with 35 U.S.C. §251 and 37 C.F.R. §1.173.

Respectfully submitted,

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